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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
TADESSE, YEWEBDAR T	
ART UNIT	**PAPER NUMBER**
1734	

DATE MAILED: 03/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/781,225	NGUYEN, ANDREW P.	
	Examiner	Art Unit	
	Yewebdar T Tadesse	1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) *29-32* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-28, drawn to a semiconductor processing system, classified in class 118, subclass 52.

II. Claims 29-32, drawn to a method, classified in class 427, subclass 240.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus can be used to separate fluids other than semiconductor processing fluids.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Mark Kupanoff on 02/25/2005 a provisional election was made without traverse to prosecute the invention of I, claim1-28.

Affirmation of this election must be made by applicant in replying to this Office action. Claims 29-32 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

7. Claims 11 and 24-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 11 recites the limitation "the first semiconductor " in claim 10. There is insufficient antecedent basis for this limitation in the claim. For the purpose of examination “the first semiconductor fluid” is assumed. Claim 24 recites the limitation "the vacuum supply" in claim 23. There is insufficient antecedent basis for this limitation in the claim. For the purpose of examination “the pump” is assumed.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Kiba et al (US 5,866,709).

As to claims 1 and 12, Kiba et al discloses (see Figs 1-3 and column 10, lines 30-60) a semiconductor substrate processing system comprising a de-gas unit (deaeration mechanism gas-liquid separation element 64a) to separate a first flowing semiconductor processing fluid into (developing solution or fluids in lines 5a, 5b) into second (fluid in lines 51-53) and third semiconductor wafer processing fluids (5a, 5b and drain line 57); a liquid trap (trap tank 21) connected to the de-gas unit to separate the second wafer processing fluid (fluid in line 51) into a gas (fluid in lines 52-54) and a liquid (fluid in line 57) and catch the liquid; and a vacuum supply (vacuum evacuation line 51) communicating with the liquid trap (tank 21) to draw the third processing fluid (fluid drain line 57) into the liquid trap and further draw the gas (lines 52-54) out of the liquid trap (21). With respect to the second wafer processing fluid including gaseous and liquid particles, this is evident from the disclosure at column 10, lines 51-59 that the second wafer processing fluid (fluid in line 51) having active agent solution leakage of TMAH solution.

As to claims 2-3 and 13-14, in Kiba et al (see Fig 14 and column 10, lines 30-60) the vacuum supply (vacuum pump in communication with the evacuation line) draws the gas out of the liquid trap and the gas contain no liquid (lines 52-54 not contaminated with the leaked liquid component).

With respect to claims 4 and 15, in Kiba et al (see Fig 2) a valve (57a) is connected to the liquid trap to drain any liquid within the liquid trap when the valve is open.

As to claims 5 and 16, Kiba et al discloses (see Fig 2) the liquid trap comprising a first opening (where line 51 feed into) and a second opening (where line 52 coming out) and a trap chamber (tank 21) interconnecting the first and second openings, the second semiconductor processing fluid (fluid in line 51) flowing into the first opening and the gas flowing out of the second opening.

As to claims 6 and 17, in Kiba et al (see Fig 2) the first and second openings (of lines 51 and 52) of the liquid trap are at an upper end thereof, the liquid falling to a bottom of the chamber (drain line 57).

With respect to claims 7 and 18, Kiba et al discloses (see Fig 1) a liquid supply (tank 1) to supply the first semiconductor processing fluid (developing solution) to the de-gas unit (64a).

As to claims 8 and 19, Kiba et al discloses (see column 6, lines 3-5) a first semiconductor processing fluid is a liquid with gaseous particles (nitrogen gas) mixed therein. With respect to claims 9 and 20, Kiba et al discloses (see Fig 1) a pressurized gas supply (gas bomb 3) to pressurize the liquid (developing solution) such that the liquid flows into the de-gas unit. With respect to claims 10 and 21, Kiba et al discloses (see Fig 1) a semiconductor substrate processing apparatus having a dispense head (nozzle 12), the dispense head being connected to the de-gas unit to dispense the third semiconductor processing fluid (5a and 5b) onto a semiconductor substrate.

As to claims 11 and 22, in Kiba et al (see column 1, lines 5-8) the first semiconductor processing fluid includes a photoresist developer solvent (resist or developing solution 2).

As to claim 23, Kiba et al discloses (see Figs 1-3, 14 and column 10, lines 30-60) a semiconductor substrate processing system comprising a de-gas unit (deaeration mechanism, gas-liquid separation element 64a, see Fig 3) having an inlet (62) and at least one outlet (63) and a de-gassing chamber (61) therein interconnecting the inlet and the outlet, separating a first flowing semiconductor processing fluid into (developing solution or fluids in lines 5a, 5b) into second (fluid in lines 51-53) and third semiconductor wafer processing fluids (5a, 5b and drain line 57); a liquid trap (trap tank 21) having a first opening (where line 51 feed into), a second opening (wherein line 52 coming out) and a chamber (tank 21) therein interconnecting the first and the second openings, the first opening being connected to the at least one outlet of the de-gas unit or deaeration mechanism ; and a pump (vacuum pump 30, see Fig 14) having a low pressure side and a high pressure side (see column 11, lines 18-45), apparently the low pressure side connected to the second opening (wherein line 51 feed into) of the liquid trap causing the third semiconductor processing fluid (5a,5b) to flow into the first opening (wherein line 52 coming out) of the liquid trap(21), the liquid trap is shaped (designed) that the second semiconductor processing fluid (fluid 51) is separated into a liquid and a gas, the liquid being caught in the chamber (tank 21) of the liquid trap and the gas flowing out of the second opening (lines 52, 53) into the low pressure side of the pump (30).

As to claims 24-25, in Kiba et al (see Fig 14 and column 10, lines 30-60) the pump (vacuum pump in communication with the evacuation line) draws the gas out of the liquid trap and the gas contain no liquid (lines 52-54 not contaminated with the leaked liquid component). With respect to claim 26, in Kiba et al a valve (57a) is connected to the liquid trap to drain any liquid within the liquid trap when the valve is open.

As to claim 27, Kiba et al discloses (see Fig 2) the liquid trap comprising a first opening (where line 51 feed into) and a second opening (where line 52 coming out) and a trap chamber (tank 21) interconnecting the first and second openings, the second semiconductor processing fluid (fluid in line 51) flowing into the first opening and the gas flowing out of the second opening.

As to claim 28, Kiba et al discloses (see Figs 1-3, 14 and column 10, lines 30-60) a semiconductor substrate processing system comprising a semiconductor substrate processing apparatus having a dispense head (12); a liquid supply containing a first semiconductor processing fluid (developing solution of tank 1); a supply line interconnecting (line 5a, 5b) the dispense head (12) and the liquid supply to flow the first semiconductor processing fluid from the liquid supply to the dispense head (12); a de-gas unit (deaeration mechanism, gas-liquid separation element 64a, see Fig 3) having an inlet (62) and at least one outlet (63) and a de-gassing chamber (61) therein interconnecting the inlet and the outlet, separating a first flowing semiconductor processing fluid into (developing solution or fluids in lines 5a, 5b) into second (fluid in lines 51-53) and third semiconductor wafer processing fluids (5a, 5b and drain line 57);

a liquid trap (trap tank 21) connected to the de-gas unit to catch the liquid particles of the second semiconductor processing fluid; and a vacuum supply (vacuum evacuation line 51) communicating with the liquid trap (tank 21) to draw the third processing fluid (fluid drain line 57) into the liquid trap and further draw the gas (lines 52-54) out of the liquid trap (21).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yewebdar T Tadesse whose telephone number is (571) 272-1238. The examiner can normally be reached on Monday-Friday 8:00 AM-4: 30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YTT

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